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EXAMINER

PIZIALI, ANDREW T

ART UNIT PAPER NUMBER

1775

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Paper No. 12

Application Number: 10/075,021  
Filing Date: February 12, 2002  
Appellant(s): FINLEY ET AL.

\_\_\_\_\_  
Donald Lepiane  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 7/17/2003.

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**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is incorrect.

In view of the arguments presented in the Appeal Brief the examiner has withdrawn the 35 U.S.C. 112 rejection of claim 51 and the 35 U.S.C. 102(b) rejection of claims 21-52.

Therefore, only issues (a), (b), (c), and (f) currently apply.

The appellant incorrectly asserts that the issues with claims 38-42 (a), claim 40 (b), and claims 50 and 52 (c) is whether the claims are unpatentable under 35 U.S.C. 112, first paragraph, as being based on a nonenabling disclosure. The actual issue with claims 38-42 (a), claim 40 (b),

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and claims 50 and 52 (c) is whether the claims are unpatentable under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement (new matter).

**(7) *Grouping of Claims***

Appellant's brief includes a statement that the claims do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) *Prior Art of Record***

4,522,844	Khanna	6-1985
5,110,662	Depauw	5-1992

**(10) *Grounds of Rejection***

The following grounds of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 38-42 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically regarding claim 38, the specification does not speak of more than one metal oxide film on the metal film.

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3. Claim 40 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The applicants claim that the metal oxide film has a density of 4 grams per cubic centimeter and a refractive index of 2.5, but the specification discloses that crystalline titanium oxide films have such properties (page 6, lines 1-19). The applicant is not enabled for a crystalline metal oxide film over an amorphous metal film.

4. Claims 50 and 52 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. While speaking of an amorphous metal oxide film over the amorphous metal film (page 7, lines 17-26), the specification does not speak of a crystalline metal oxide film over the amorphous metal film.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 21-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 4,522,844 to Khanna et al (hereinafter referred to as Khanna) in view of US Patent No. 5,110,662 to Depauw et al. (hereinafter referred to as Depauw).

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Regarding claims 21-52, Khanna discloses a coated product comprising a substrate and a film sputtered from a metal target in an atmosphere comprising inert gas and reactive gas resulting in a metal film having an amorphous structure (see entire document including column 1, lines 28-52, column 2, lines 33-44, column 3, lines 31-33). Khanna does not mention depositing one or more metal oxide films over the amorphous metal film, but Depauw discloses that it is known to deposit one or more metal oxide films (such as titanium oxide) over an amorphous metal film to form a corrosion resistant glass coated article that reflects infrared light (see entire document including column 8, lines 42-57). It would have been obvious to one having ordinary skill in the art at the time the invention was made to deposit one or more metal oxide films over the amorphous metal film of Khanna, as taught by Depauw, because the coated glass article could be used to reflect infrared light.

It is the examiner's position that the coated product of Khanna in view of Depauw is identical to or only slightly different than the claimed coated product prepared by the method of the claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show obvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). Khanna in view of Depauw either anticipated or strongly suggested the claimed subject matter. It is noted that if the applicant intends to rely on Examples in the specification or in a submitted

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declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with Khanna in view of Depauw.

Regarding claims 22-24, 32 and 40-44, Khanna discloses that the metal may be titanium (column 1, lines 53-63).

Regarding claims 40-44, Depauw discloses that the metal of the metal oxide films may be titanium (column 8, lines 29-57).

Regarding claims 25-26, 39 and 46, Depauw discloses that the metal sub-oxide or metallic films may be deposited in the range of 25 to 450 A (column 8, lines 29-57).

Regarding claims 27-28, 31 and 43, Khanna discloses that the reactive gas may be oxygen (column 3, lines 31-33).

Regarding claims 29-30, 33 and 43, Khanna discloses that the inert gas may be argon (column 3, lines 31-33).

Regarding claims 32, 35, 40 and 43, Khanna discloses that the substrate may be glass (column 1, lines 34-35).

Regarding claims 36-37, 43, 48 and 51, Depauw discloses that the coated product may be thermally oxidized (column 5, lines 21-35).

**(11) Response to Argument**

**Issue (a)**

The appellant incorrectly asserts that the issue with claims 38-42 is whether the claims are unpatentable under 35 U.S.C. 112, first paragraph, as being based on a nonenabling

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disclosure. The actual issue with claims 38-42 is whether the claims are unpatentable under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement (new matter).

The appellant asserts that the amendment to claim 38, filed on 4/15/2003, but not entered, would have overcome the rejection of claims 38-42 under 35 U.S.C. 112, first paragraph. The proposed amendment to claim 38 was not entered because the proposed amendment would raise new issues that would require further consideration and/or search because the examiner has not considered and/or searched for a product in accordance with claim 36 (claim 38 depends on claim 36) wherein the metal oxide film of claim 21 (claim 36 depends on claim 21) is deposited on the amorphous metal film of claim 21 prior to thermal oxidation of the amorphous metal film. Therefore, appellant's argument is without merit.

**Issue (b)**

The appellant incorrectly asserts that the issue with claim 40 is whether the claim is unpatentable under 35 U.S.C. 112, first paragraph, as being based on a nonenabling disclosure. The actual issue with claim 40 is whether the claim is unpatentable under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement (new matter).

The appellant asserts that the amendment to claim 40, filed on 4/15/2003, but not entered, would have overcome the rejection of claim 40 under 35 U.S.C. 112, first paragraph. The examiner asserts that the proposed amendment to claim 40 was not entered because the proposed amendment to claim 40 would raise new issues that would require further consideration and/or search because the examiner has not considered and/or searched for the product in accordance with proposed claim 38 (claim 40 depends on claim 38) wherein the density of the thermally



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oxidized amorphous metal film of claim 36 is 4 grams per cubic centimeter and the refractive index of the thermally oxidized amorphous metal film is 2.5. Therefore, appellant's argument is without merit.

**Issue (c)**

The appellant incorrectly asserts that the issue with claims 50 and 52 is whether the claims are unpatentable under 35 U.S.C. 112, first paragraph, as being based on a nonenabling disclosure. The actual issue with claims 50 and 52 is whether the claims are unpatentable under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement (new matter).

The appellant asserts that the amendment to claims 50 and 52, filed on 4/15/2003, but not entered, would have overcome the rejection of claims 50 and 52 under 35 U.S.C. 112, first paragraph. The examiner asserts that the proposed amendment to claim 50 was not entered because the proposed amendment would raise new issues that would require further consideration and/or search because the examiner has not considered and/or searched for a product in accordance with claim 47 (claim 50 depends on claim 47) wherein the thermally oxidized amorphous metal film is composed of crystalline metal oxide. The proposed amendment to claim 52 would raise new issues that would require further consideration and/or search because the examiner has not considered and/or searched for the product in accordance with proposed claim 50 (claim 52 depends on claim 50) wherein the thermally oxidized amorphous metal film is a titanium oxide film with a crystalline structure having a density of greater than  $3.4 \text{ g/cm}^3$ . Therefore, appellant's argument is without merit.

**Issue (d)**

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The examiner has withdrawn the 35 U.S.C. 112 rejection of claim 51, therefore, only issues (a), (b), (c), and (f) currently apply.

**Issue (e)**

The examiner has withdrawn the 35 U.S.C. 102(b) rejection of claims 21-52, therefore, only issues (a), (b), (c), and (f) currently apply.

**Issue (f)**

**Claims 21 and 27-36 (stand or fall together):**

The appellant asserts that an artisan skilled in the art of depositing corrosion resistant coatings would not combine Khanna and Depauw. The examiner respectfully disagrees. The amorphous metal film of Khanna is a highly corrosion resistant film that protects adjacent layers (column 1, lines 64-66). Depauw discloses a multi-layer article comprising a reflective silver layer sandwiched between an oxide undercoat and a metal overcoat (column 3, lines 20-35). Depauw discloses that the overcoat and undercoat are applied in combination with the reflective silver layer so as to protect it physically against abrasion and chemically against corrosion (column 1, lines 59-61). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the amorphous metal film of Khanna as at least part of the metal undercoat of Depauw, because the metal film disclosed by Khanna is a highly corrosion resistant film that protects adjacent layers, and the metal undercoat of Depauw requires a corrosion resistant metal film that will protect the adjacent silver layer.

The appellant asserts that by combining Khanna with Depauw the film of Khanna would replace the further or outer titanium dioxide layer. The appellant asserts that with this arrangement the coated article would not have a metal oxide layer over the corrosion layer of

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Khanna. The examiner respectfully disagrees. By combining Khanna with Depauw the metal film of Khanna would replace the inner metal film of the undercoat multi-layer (see column 8, lines 42-57). The article would have at least one outer oxide film over the inner titanium metal film (see column 8, lines 42-57).

The appellant asserts that since Depauw discloses that subsequent depositions in a reactive atmosphere “tend” to oxidize the metal film (column 5, lines 3-7) the deposition of the subsequent oxide layer(s) would completely oxidize the metal film. The examiner respectfully disagrees. Depauw discloses that the oxide films may be deposited by depositing oxide as such or by reactive sputtering of the respective metal in an oxygen-containing atmosphere (column 4, lines 60-66). Depauw teaches that the metal film tends to oxidize when subsequent metal oxide films are deposited in a reactive atmosphere, but Depauw fails to teach or suggest that when the oxide layers are deposited as such in a non-reactive atmosphere (no oxygen) the metal film would oxidize.

**Claims 22-24 (stand or fall together):**

The above discussions are incorporated herein.

The appellant asserts that there is no teaching in Khanna wherein the metal of the metal cathode target is titanium. The examiner respectfully disagrees. Khanna clearly discloses that the film may be deposited by cathode sputtering (column 2, lines 32-36) and that the metal may be any one of a variety of metals including titanium (column 1, lines 53-63 and claim 2).

**Claim 25 (stands alone):**

The above discussions are incorporated herein.

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Appellant's arguments are primarily directed to the metal film composition disclosed by Depauw. In the current rejection the metal film composition disclosed by Depauw is replaced by the amorphous metal film composition taught by Khanna. Appellant's arguments are not commensurate in scope with the current rejection.

The appellant asserts that the metal film disclosed by the prior art does not possess the currently claimed thickness. The examiner respectfully disagrees. Depauw discloses that the metal film preferably has a thickness ranging from 2 to 15nm (20 to 150 Å) (column 8, lines 10-28).

**Claim 26 (stands alone):**

The above discussions are incorporated herein.

Appellant's arguments are primarily directed to the metal film composition disclosed by Depauw. In the current rejection the metal film composition disclosed by Depauw is replaced by the amorphous metal film composition taught by Khanna. Appellant's arguments are not commensurate in scope with the current rejection.

The appellant asserts that the metal film disclosed by the prior art does not possess the currently claimed thickness. The examiner respectfully disagrees. Depauw discloses that each film in the overcoat may have a thickness ranging from 25 to 450 Å (column 8, lines 47-57). Depauw discloses that the metal film preferably has a thickness ranging from 2 to 15nm (20 to 150 Å), but Depauw also discloses that the metal film must have a thickness of sufficient material to react with the oxygen while maintaining the required light transmission properties (column 8, lines 10-28). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the thickness of the metal film of Depauw to within the

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range of 200 to 700 Å, because the metal film must have a thickness of sufficient material to react with the oxygen while maintaining the required light transmission properties and because a thicker metal film would decrease the transmittance of the article which is desired in some heat reducing low emissivity coated glass applications.

**Claim 37 (stands alone):**

The above discussions are incorporated herein.

Appellant's arguments are primarily directed to the metal film composition disclosed by Depauw. In the current rejection the metal film composition disclosed by Depauw is replaced by the amorphous metal film composition taught by Khanna. Appellant's arguments are not commensurate in scope with the current rejection.

The appellant asserts "Another difference between the discussion of Depauw and applicant's claim 37 is the fact that claim 37 recites a temperature whereas the above discussion of Depauw does not recite a temperature." It is the position of the examiner that the coated product of Khanna in view of Depauw is identical to or only slightly different than the claimed coated product prepared by the method of the claims. Although Depauw does not specifically mention a thermal treatment temperature range, Depauw discloses that the coated product may be thermally oxidized (column 5, lines 21-35).

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.

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**Claims 38, 41 and 42 (stand or fall together):**

The above discussions are incorporated herein.

The appellant appears to be asserting that the prior art does not disclose a further metal oxide layer deposited on the metal film prior to thermal oxidation of the metal film. The examiner respectfully disagrees. Depauw discloses that two metal oxide layers may be deposited on the metal film (column 8, lines 53-57).

**Claims 39 and 46 (stand or fall together):**

The above discussions are incorporated herein.

The appellant asserts "The only film of the coated product of Depauw discussed in column 8, lines 29-57 is the 100 A titanium dioxide film." The examiner asserts that this titanium oxide film is over the metal film and has a thickness of 100A which is within the currently claimed thickness range.

**Claim 40 stands alone:**

The above discussions are incorporated herein.

The appellant asserts "There is no discussion in Khanna or Depauw of the density or refractive index of the amorphous metal film of Khanna or the metal oxide films of the coatings of Depauw." Although Depauw does not mention the specific density or refractive index of the oxide film, considering that the oxide films disclosed by Depauw and the currently claimed oxide film are produced by a substantially identical process (sputtering), and are made of the same material (titanium oxide), it appears that the metal oxide film taught by the Depauw possesses the currently claimed properties.

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**Claim 43 (stands alone):**

The above discussions are incorporated herein.

The appellant asserts "Since there is a difference in optical properties and density , the thermally treated coated article of claim 43 will be different from the properties of the coated article made using the amorphous film of Khanna as the outer film of Depauw or any film of Depauw." The appellant has failed to demonstrate, or even attempted to demonstrate, that there is a difference in optical properties or density of the currently claimed amorphous metal film and the amorphous metal film taught by Khanna.

**Claim 44 (stands alone):**

The above discussions are incorporated herein.

The appellant asserts "Khanna does not disclose two metal layers of the same metal." The examiner agrees, but claim 44 does not require two metal layers of the same metal. As currently claimed in claim 44, the metal layer taught by the prior art is titanium and the oxide layer taught by the prior art is titanium oxide (see column 8, lines 42-57).

**Claim 45 (stands alone):**

The above discussions are incorporated herein.

Depauw discloses that the oxide film may be deposited by depositing oxide as such or by reactive sputtering of the respective metal in an oxygen-containing atmosphere (column 4, lines 60-66). It is the position of the examiner that the coated product of Khanna in view of Depauw, wherein the metal oxide film is deposited as an oxide in a non-reactive atmosphere is identical to or only slightly different than the claimed coated product prepared by depositing the metal oxide films in a reactive atmosphere.

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**Claims 47, 49 and 50 (stand or fall together):**

The above discussions are incorporated herein.

The appellant asserts that the article taught by Khanna in view of Depauw does not possess the currently claimed properties. The examiner respectfully disagrees. Although Khanna does not mention the specific hardness or density of the metal film compared to the currently claimed metal film, considering that the metal films are produced by a substantially identical process (sputtering in an atmosphere with oxygen and argon), and are made of the same material (amorphous titanium), it appears that the metal film taught by Khanna possesses the currently claimed properties.

**Claim 48 (stands alone):**

The above discussions are incorporated herein.

The appellant appears to be asserting that the prior art fails to teach the currently claimed metal oxide film. The examiner respectfully disagrees. The metal film taught by Khanna is an amorphous metal film sputtered from a metal cathode target (column 2, lines 33-37) in an atmosphere comprising an inert gas (argon) and oxygen (column 3, lines 31-33). Depauw teaches the subsequent oxidation of the metal film to a metal oxide film (column 5, lines 21-27).

**Claim 51 (stands alone):**

The above discussions are incorporated herein.

The appellant appears to be asserting that the prior art fails to teach the currently claimed article comprising a first metal oxide film and a second metal oxide film. The examiner respectfully disagrees. The metal film taught by Khanna is an amorphous metal film sputtered from a metal cathode target (column 2, lines 33-37) in an atmosphere comprising an inert gas



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(argon) and oxygen (column 3, lines 31-33). Depauw also discloses that one or more oxide films may be subsequently deposited over the first metal film (column 8, lines 54-57). Depauw teaches the oxidation of the metal film to a metal oxide film (column 5, lines 21-27).

Depauw discloses that any subsequent metal oxide film that may be deposited on the first metal oxide film (initially a metal film) may be deposited by depositing oxide as such or by reactive sputtering of the respective metal in an oxygen-containing atmosphere (column 4, lines 60-66). The coated product of Khanna in view of Depauw, wherein the subsequent metal oxide film is deposited as an oxide in a non-reactive atmosphere is identical to or only slightly different than the claimed coated product prepared by depositing the subsequent metal oxide films in a reactive atmosphere.

**Claim 52 (stands alone):**

The above discussions are incorporated herein.


The appellant appears to be arguing that the metal film turned (oxidized) metal oxide film taught by the prior art does not possess the currently claimed density. The examiner respectfully disagrees. Although the prior art does not disclose the specific density of the oxide film, considering that the oxide film disclosed by the prior art, compared to the currently claimed oxide film, is produced by a substantially identical process (sputtering in argon and oxygen), and is made of the same material (amorphous titanium oxide), it appears that the metal oxide film taught by the prior art possesses the currently claimed density.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

atp  
September 23, 2003

  
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PATENT EXAMINER

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